WHAT IS CLAIMED IS:

1. A method of inducing expression of at least one gene in a cell, comprising the steps of:

contacting said cell with an transcription factor decoy oligonucleotide sequence directed against a nucleotide sequence encoding a shear stress response element; and

determining the expression of said gene in said cell.

2. The method of claim 1, wherein said oligonucleotide comprises a terminal phosphothiorate moiety and a phosphodiester backbone.

3. The method of claim 1, wherein said oligonucleotide passes cell membranes and accumulates in the nuclear compartment of said cell.

4. The method of claim 1 wherein said cell is a cultured cell.

5. The method of claim 1, wherein said cell is selected from the group consisting of an epithelial cell and an endothelial cell.

6. The method of claim 4, wherein said cell is selected from the group consisting of renal cortical cell, renal fibroblast cell, hepatocyte, pancreatic islet, renal interstitial cell, parathyroid cell, thyroid cell, pituitary cell, ovarian cell and testicular cell.

7. The method of claim 1, wherein said cell is grown in two dimensional culture.

8. The method of claim 1, wherein said shear stress response element is selected from the group consisting of GAGACC and GGTCTC.

9. The method of claim 1, wherein the gene encodes a protein selected from the group consisting of megalin, cubulin, erythropoietin and 1-a-hydroxylase.

10. The method of claim 1, wherein the concentration of said oligonucleotide is from about 10 nm to about 10 mm.

11. A transcription factor decoy, comprising an oligonucleotide sequence directed against a nucleotide sequence encoding a shear stress response element.

12. The transcription factor decoy of claim 11, wherein said nucleotide sequence encoding a shear stress response element has a sequence selected from the group consisting of GAGACC and GGTCTC.

13. A method of producing a functional protein, comprising the steps of:

isolating mammalian cells;

placing said cells into a rotating wall vessel containing a cell culture comprising culture media and culture matrix;

producing three-dimensional cell aggregates under simulated microgravity conditions; and

detecting expression of the functional protein in the cell culture.

14. The method of claim 13, wherein said simulated microgravity conditions comprise a balance between gravity and oppositely directed physical forces.

15. The method of claim 14, wherein said physical forces are selected from the group consisting of sedimentational shear stress, centrifugal forces, viscosity and coriolus forces.

16. The method of claim 13, wherein said functional protein is selected from the group consisting of a hormone, a toxin receptor and a shear stress dependent functional biomolecule.

17. The method of claim 16, wherein said hormone is selected from the group consisting of 1,25-dihydroxy-vitamin D3 and erythropoietin.

18. The method of claim 16, wherein said toxin receptor is selected from the group consisting of megalin and cubulin.

19. The method of claim 16, wherein said shear stress dependent functional biomolecule is selected from the group consisting of villin, magnesium dependent superoxide dismutase, nitric oxide synthase, c-fos, c-jun, platelet derived growth factor-b, transforming growth factor-b, tissue-type plasminogen activator and monocyte chemotactic protein-1, megalin, cubulin, erythropoietin and 1-a-hydroxylase.

20. The method of claim 13, wherein said cells are selected from the group consisting of renal cortical cells, renal fibroblast cells, hepatocytes, pancreatic islets, renal interstitial cells, parathyroid cells, thyroid cells, pituitary cells, ovarian cells and testicular cells.

21. The method of claim 13, wherein said cell is selected from the group consisting of epithelial cell and endothelial cell.

22. The method of claim 13, wherein said cell contains shear stress response elements.

23. The method of claim 22, wherein said shear stress response element is selected from the group consisting of GAGACC and GGTCTC.

24. The method of claim 13, wherein said rotating wall vessel is initiated and maintained from about 6 rotations per minute to about 16 rotations per minute.

25. The method of claim 15, wherein said sedimentational shear stress is from about 0.2 dynes/cm2 to about 1.0 dynes/cm2.

26. The method of claim 13, wherein said culture matrix contains a core structure selected from the group consisting of cell aggregates and microcarrier beads.

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